

### CLAIM Amendments

1. (Currently Amended) A method for generating a genetically modified organism for drug screening, which comprises the steps

- a) observing the gene expression pattern of an organism
- ab) causing heterologous expression of at least one protein or protein fragment by genetic modification of the organism,
- bc) ~~analyzing~~observing the modified gene expression pattern of the organism heterologously  
expressing the at least one protein or protein fragment and
- d) identifying compensatingly differentially regulated genes and
- ee) phenotyping the organism heterologously expressing the at least one protein or protein fragment.

2. (Currently Amended) The method as claimed in claim 1, wherein the step of phenotyping is ~~carried out by~~ selected from the group consisting of  
reducing/eliminating the expression of at least one compensatingly differentially expression  
regulated gene in the organism,  
eliminating expression of at least one compensatingly differentially regulated gene, and or by  
labeling at least one compensatingly differentially regulated gene.

3. (Currently Amended) The method as claimed in ~~either of claims 1 and 2,~~ wherein the ~~genetic modification causes heterologous expression of~~ at least one protein or protein fragment ~~which is a~~ protein or protein fragment endogenous to the organism ~~and/or foreign.~~

4. (Currently Amended) The method as claimed in ~~any of claims 1 to 3,~~ wherein the genetic modification causes a reduction or elimination of the expression of at least one protein endogenous to the organism.

5. (Currently Amended) The method as claimed in ~~any of claims 1 to 4,~~ wherein the ~~modified~~ heterologous expression is inducible.

6. (Currently Amended) The method as claimed in claim 5, wherein the genetic modification comprises introducing a vector which enables the at least one protein or protein fragment to be inducibly expressed, ~~preferably a vector inducible with galactose, copper tetracycline or other comparably inducible vectors.~~
7. (Currently Amended) The method as claimed in ~~any of~~ claims 1 ~~to 6~~, wherein the genetic modification comprises a knock out, ~~preferably an inducible knock out.~~
8. (Currently Amended) The method as claimed in ~~any of~~ claims 1 ~~to 7~~, wherein the organism is drosophila, C. elegans, a prokaryotic or a eukaryotic cell.
9. (Currently Amended) The method as claimed in claim 8, wherein the cell is a yeast cell, ~~preferably a yeast cell of the strain S. cerevisiae.~~
10. (Currently Amended) The method as claimed in ~~any of~~ claims 1 ~~to 9~~, wherein at least one step of observing the modified gene expression pattern is analyzed performed with the aid of DNA or protein microarrays.
11. (Currently Amended) The method as claimed in ~~any of~~ claims 1 ~~to 10~~ 2, wherein phenotyping is carried out by reducing or eliminating expression of the at least one compensatingly differentially regulated gene.
12. (Currently Amended) The method as claimed in claim 11, wherein expression of ~~the a~~ a compensatingly differentially ~~expressed~~ regulated gene is enhanced ~~to control organisms in the organism heterologously expressing the at least one protein or protein fragment,~~ and the reduction or elimination is caused by at least partial inhibition of said enhanced expression.
13. (Currently Amended) The method as claimed in claim 7, wherein the knock out of the differentially expressed gene is carried out [lacuna] replacing at least part of the coding sequence of the differentially regulated gene with the coding sequence of a reporter gene or parts of the reporter gene sequence which are sufficient to be detected.
14. (Currently Amended) The method as claimed in claim ~~11~~ 1, wherein expression of a the compensatingly differentially expressed regulated gene is less strongly expressed than in control organisms decreased in the organism heterologously expressing the at least one protein or protein

fragment, and the reduction or elimination phenotyping is carried out by enhancing ~~its~~ the expression of the compensatingly differentially regulated gene.

15. (Currently Amended) The method as claimed in ~~any of claims 1 to 14~~, wherein the ~~reduction or elimination leads to~~ phenotyping results in growth inhibition of the organism.

16. (Currently Amended) The method as claimed in ~~any of claims 1 to 102~~, wherein phenotyping is carried out by labeling the gene product of the compensatingly differentially regulated gene.

17. (Currently Amended) A genetically modified, phenotyped organism, obtained by a method as claimed in ~~any of claims 1 to 16~~.

18. (Currently Amended) A genetically modified organism, having

- a) a genetically modified expression of at least one endogenous or foreign gene, which results in compensatingly differential expression of at least one other gene endogenous to said organism, and
- b) a detectable phenotype caused by reducing/~~eliminating~~ the compensatingly differential expression of the gene or by labeling the compensatingly differentially regulated gene product.

19. (Canceled).

20. (Canceled).

21. (Currently Amended) An assay for drug screening using at least one phenotyped organism as claimed in ~~either of claims 17 or 18~~, which comprises the steps

- c) determining the phenotype of said organism
- d) contacting the substance to be tested with said organism
- e) observing a ~~possible~~ modification of said phenotype.

22. (Canceled).

23. (New) The method as claimed in claim 9, wherein the cell is a yeast cell of the strain *S. cerevisiae*.